



Case Report

Spontaneous rupture of splenic vein in a pregnant woman during a religious ritual

Nursen Turan MD (Specialist of Forensic Medicine)^{a,*},
Fatih Oghan MD (Assistant Professor of Otolaryngology)^b,
Tansev Boran MD (Specialist of Forensic Medicine)^c

^a Karadeniz Technical University, Medical Faculty, Forensic Medicine Department, Trabzon, Turkey

^b Dumlupınar University, Training and Research Hospital, Clinic of Otolaryngology, Kutahya, Turkey

^c The Council of Forensic Medicine, Istanbul, Turkey

Received 30 June 2006; received in revised form 28 November 2006; accepted 4 December 2006

Available online 13 June 2007

Abstract

The treatment of retroperitoneal hemorrhage can be by surgical or a conservative approach but the main problems about these cases are difficulty in diagnosis due to negative results after abdominal lavage and the difficulties in accessing the retroperitoneal area surgically. Retroperitoneal hemorrhage during pregnancy, occurring as a result of spontaneous rupture, is very rare event. Such cases require urgent operation and if not, result in high mortality. A twenty-eight year old pregnant woman was admitted to the hospital dead after collapsing at home during a religious ritual. No systemic or gynecological pathology had been diagnosed. No traumatic injury on her body was found at early postmortem examination. The pathologic findings found at the autopsy are; approximately 2.5 L of coagulated blood in the retroperitoneal region and 10–12 cm of haematoma at the hilum of spleen; dissection revealed a tear of 0.5 cm on lienal vein at a point 3 cm from the hilum. Surgical approach is the most important procedure for diagnosis and therapy of the bleeding. Autopsy may be only diagnostic technique in the case of retroperitoneal hemorrhage death when the death is so rapid that there is no time to intervene surgically.

© 2007 Elsevier Ltd and FFLM. All rights reserved.

Keywords: Splenic vein rupture; Retroperitoneal hemorrhage; Autopsy at pregnant woman

1. Introduction

Although retroperitoneal hemorrhage can be the result of blunt, penetrating or surgical^{1–4} injuries, it may develop spontaneously. Retroperitoneal haematoma due to spontaneous bleeding, which is rarely seen in pregnancy, has several different etiological factors. These bleedings may develop secondarily due to anticoagulant therapy or renal aneurysm, splenic artery and vein ruptures, inferior pancreaticoduodenal artery aneurysm⁵, non-aneurysmal visceral

aorta perforation⁶ and uterine arteriovenous malformation ruptures.⁷

In this case, we report a pregnant woman who had massive retroperitoneal hemorrhage due to spontaneous splenic vein rupture; the autopsy findings of her were discussed.

2. Case report

She was 28 years old and had a 7 year old child. She was 5 months pregnant woman and under control of an obstetrician at about one year. She did not have any systemic or obstetrical problems during her pregnancy. One week before death date, she was sent to hospital for amniocentesis due to a family history of one parent with a previously

* Corresponding author.

E-mail address: drnursturan@yahoo.com (N. Turan).

identified structural chromosome rearrangement. There was nothing abnormal in the results of tests. She used anti-anemic and vitamin pills which are used during pregnancy as usual.

Her relatives said that she did not have any complaint before her slight sickness but she had fainted during namaz (Muslims perform five daily contact prayers throughout the day). This results in moderate physical exercise particularly to every muscle in the body). They took her to Bartin SSK Hospital. It was seen from the examination papers that the doctor could not measure her blood pressure, found pupils fix and dilated, her hands and feet were cold and there was no spontaneous respiration. The doctor realized that she was pregnant, called the obstetrician and undertook tracheostomy and resuscitation. They did not take fetal heartbeat during Doppler examination. She was pronounced deceased after 30 minutes of cardio-pulmonary resuscitation.

Autopsy: A woman aged 25–30 years old, brown hairs and eyes, 170 cm in length, 70 kg in weight. No injuries were seen on complete external examination. An autopsy was performed on one day after her death.

Brain was 1.39 kg in weight and the surface and the section of the brain was pale with no other pathologic changes.

Right lung was 0.4 kg, left lung was 0.35 kg in weight. There was adhesion of the right lung to the thorax wall and 0.15 L hemorrhage liquid was seen at the thorax cavity. There were rare subpleural petechias on both lungs and edema at the sections.

The heart was 0.31 kg in weight. Aortic valve, mitral valve, tricuspid valve and pulmonary valve was measured 7 cm, 10 cm, 12 cm and 8 cm in length. Left ventricle wall thickness was 1.5 cm, right ventricle wall thickness was 0.3 cm in length. Coronary system was normal. No macroscopic pathologic changes were seen in the sections of myocardium. In examination of the neck organs, food remnants and foamy liquid were seen both in esophagus and trachea.

2.5 L partially coagulated hemorrhage was seen in the abdominal cavity (Fig. 1). The liver was 1.9 kg in weight. The surface and the sections of the liver were pale with yellowish color changes. A few amounts of food were seen in stomach. Spleen was weighed 0.41 kg and at the hilum of the spleen, haematoma was seen with dimensions of 10 × 12 cm and a rupture 0.5 cm length, was seen at vena lienalis 3 cm far from the hilum of the spleen (Fig. 2). Both kidneys were pale. The dimensions of the uterus were 23 cm in length, 23 cm in width and the thickness of the myometrium was 1.5 cm. No rupture at uterus is determined. In the cavity of the uterus there was a dead fetus, 0.6 kg in weight and 29.5 cm length. Beclard and calcaneus ossification centers had not been developed yet.

Blood and organ samples were taken for toxicological analyze and samples from heart, lungs, liver, kidneys, brain, spleen, myometrium and pancreas were taken for



Fig. 1. Coagulated hemorrhage in the retroperitoneal region.



Fig. 2. Haematoma and rupture at lienal vein 3 cm far from the hilum of splein.

microscopic examination. The result of the toxicological analysis was 42 mg/dL ethanol in blood with no other toxic substance.

In microscopic examination; the heart was normal and findings of ischemic alveoli destruction in lungs, macrovesicular and microvesicular fatty changes in liver were present.

3. Discussion

Spontaneous intraabdominal or retroperitoneal bleeding which are rarely seen at pregnancy has many different etiological factors. These bleedings may develop secondarily due to anticoagulant therapy or renal aneurysm, splenic artery and vein ruptures,^{8–11} inferior pancreaticoduodenal artery aneurysm,⁵ non-aneurysmal visceral aorta perforation⁶ and uterine arteriovenous malformation ruptures.⁷ The origins of the ruptures due to vascular pathologies at pregnancy may be hormonal, genetic, thrombotic or mechanical.¹² Increased blood flow and changes in the vascular wall put pregnant woman at risk for the rupture.^{9,13}

Although retroperitoneal hemorrhage is the result of blunt or penetrating injuries, it may develop spontaneously. The spleen ruptures spontaneously in some patients with infectious mononucleosis, malaria, and septicemia because it is large and friable under these conditions.¹⁴ There was no evidence of trauma emphasizing the spontaneous character of rupture of the splenic vein. Histological examination and clinical review of her background has showed no pathological finding. Other important predisposing factors for rupture of vein such as portal hypertension, systemic hypertension, abdominal trauma, infective endocarditis, polyarteritis nodosa and segmental medial arteriopathy were also absent.^{11,13,15–21}

While splenic artery and vein ruptures have been usually seen in the third trimester of the pregnancy, in our case it was in the second trimester.^{9,22}

Spleen, splenic artery or vein ruptures at pregnancy, which threatens the lives of mother and the baby, are very important situations that need emergent surgical aid. Late diagnosis may have serious consequences.²²

Early consideration of a diagnosis of a ruptured splenic vessel as opposed to other critical postpartum conditions might increase the likelihood of survival of the affected woman and her baby.¹⁹ In case of acute abdominal pain accompanied by progressive hypotension in a pregnant patient, a rupture of the splenic artery has to be considered.^{9,13,18,19} Rupture showing acute abdominal pain and cardiovascular collapse suggest strongly urgent operation. After signs of hemorrhagic shock developed, on abdomen symptoms of diffuse peritoneal irritation and on repeated sonographic examination accumulation of fluid in the abdominal cavity occur.²³ Angiography is the study of choice for diagnosing the presence of visceral aneurysm and rupture if cardiovascular condition is good. Also computed tomography scan with contrast revealed the correct diagnosis if the cardiovascular condition is good and successful treatment was initiated.^{16,20}

Active management and operation are the most important procedures for diagnosis and therapy of the bleeding. The patient is subjected to an urgent operation with finding of rupture of lienal vein. Abdominal delivery will help to establish diagnosis and should be performed immediately.^{9,13,18,19}

Bleeding due to splenic vein ruptures at pregnancy, as in our case, is a very rare case.^{8,9,12,24} In many studies, case reports about this kind of bleeding, show that these cases have high mortality risk because of early diagnose difficulties. In the literature, authors found the mortality rate of these cases as 70%.^{20,21,24,25}

If appropriate autopsy techniques are not practiced especially in retroperitoneal bleeding, it may be difficult to find the source of the bleeding. For this reason, it is important to undertake a full clinical assessment of the case before autopsy and also to undertake autopsy carefully to be able to diagnose cause of death because of ret-

roperitoneal hemorrhage. All organs should be removed along with their anatomical position after external macroscopic examination. All vessels should be dissected carefully to identify any lacerations. In conclusion, autopsy may be only diagnostic technique in the case of retroperitoneal hemorrhage death when the death is so rapid that no surgical procedures can be carried out on the patient.

References

1. Akata T, Nakayama T, Kandabashi T, et al. Massive retroperitoneal hemorrhage associated with femoral vein cannulation: case reports. *J Clin Anesth* 1998;10:321–6.
2. Charny CK, Stanziale SF, Khilnani NM, et al. *The image of trauma. The Journal of Trauma: Injury, Infection and Critical Care*. PA: Lippincott Williams & Wilkins; 1999.
3. Montravers P, Villamizar J, Sansom A, et al. Superinfection of posttraumatic retroperitoneal hematoma secondary to ascending urinary tract infection. *J Trauma: Injury Infect Crit Care* 2001;50: 931–3.
4. Medina D, Lavery R, Ross SE, et al. *Ureteral trauma: preoperative studies neither predict injury nor prevent missed injuries*. Elsevier Science Inc.; 1998.
5. Kabaroidis A, Papaziogas B, Papaziogas T. Spontaneous retroperitoneal hematoma caused by aneurysm of the inferior pancreaticoduodenal artery. *Am J Surg* 2002;184:174–5.
6. Curi AM, Skelly CL, Woo DH, et al. Spontaneous perforation of a non-aneurysmal visceral aorta. *Cardiovasc Surg* 1998;10: 279–83.
7. Simpson I, Ng A, Griffin C. A rare cause of an acute abdomen in late pregnancy. *Aust N Z J Obstet Gynaecol* 1995;35:435–6.
8. Madhavan P, Hegarty P, Akram M, et al. Spontaneous rupture of the splenic vein in pregnancy. *Ir Med J* 1998;91:64.
9. Sam CE, Rabl M, Joura EA. Aneurysm of the splenic artery: rupture in pregnancy. *Wien Klin Wochenschr* 2000;112:896–8.
10. Sarmah BD, Sokhi GS. Spontaneous rupture of the splenic vein. *Br J Surg* 1984;71:351.
11. Lamba M, Veinat JP, Acharya V, et al. Fatal splenic arterial aneurysmal rupture associated with chronic pancreatitis. *Am J Forensic Med Pathol* 2002;23:281–3.
12. Cardia G, Iusco D, Melino R, et al. Unusual pregnancy-related vascular emergency. *Am J Perinatol* 2002;19:241–6.
13. Lang W et al. Surgery of a splenic artery aneurysm during pregnancy. *Eur J Obstet Gynecol Reprod Biol* 2002;102:215–6.
14. Moore KL. *Clinically oriented anatomy*. Baltimore, PA: Lippincott Williams & Wilkins; 1985.
15. Toscano RL, Ruiz OR, Gerace Jr CA. Rupture of splenic artery pseudoaneurysm. *Am Surg* 1995;61:940–2.
16. Ufberg JW, Mcneil B, Swisher L. Ruptured renal artery aneurysm: an uncommon cause of acute abdominal pain. *J Emerg Med* 2003;25:35–8.
17. Chiquillo Barber MT et al. Rupture of splenic artery aneurysm as a cause of acute abdomen. *Rev Esp Enferm Dig* 1992;82:359–62.
18. Boschmann H, Zimmermann HB, et al. Ruptured splenic artery aneurysm: a rare cause of recurrent gastrointestinal hemorrhages. *Med Klin (Munich)* 2001;96:351–4.
19. Rust M, Schneider J, von Hundels hausen B, et al. Postpartum rupture of an aneurysm of the arteria lienalis. *Anesthesiol Intensivmed Not Fallmed Schmerzther* 1996;31:321–4.
20. D'Ambrosio R et al. Intraperitoneal hemorrhage from rupture of an aneurysm of splenic artery: case report and literature review. *Ann Ital Chir* 2003;74:97–101.
21. Selo-Ojeme DO, Welch CC. Review: spontaneous rupture of splenic artery aneurysm in pregnancy. *Eur J Obstet Gynecol Reprod Biol* 2003;109:124–7.

22. de Graaff J, Pijpers PM. Spontaneous rupture of the spleen in third trimester of pregnancy: report of a case and review of the literature. *Eur J Obstet Gynecol Reprod Biol* 1987;25:243–7.
23. Petras D, Rezar V. An unusual case of traumatic hemoperitoneum. *Rozhl Chir* 2003;82:14–6.
24. Tanchev S, Popova M, Slavov I. The “splenic emergency syndrome” during pregnancy (a report of 2 cases). *Akush Ginekol (Sofia)* 1992;31:32–4.
25. Toro H, Gonzalez P, Moyano D, et al. Splenic rupture in the course of pancreatitis. *Rev Esp Enferm Dig* 1993;83:51–2.